Claim Amendments

Please amend the pending claims as follows:

1. (currently amended) An adaptive filter, comprising: a filter input for receiving a first signal; a filter output for outputting a second signal based upon said first signal; an error input for receiving an error signal; a plurality of first coefficients, each having an associated energy, wherein said first coefficients are modified based upon the error signal; and a plurality of second coefficients having a start coefficient and an end coefficient, the second coefficients being a subset of the first coefficients, wherein the start coefficient and end coefficient are determined by applying at least one threshold value to an energy value, said energy value being a function of the energy of a plurality of first coefficients and wherein said second coefficients are used to derive said error signal.

2. (original) The adaptive filter of claim 1 wherein the at least one threshold value comprises a low-end threshold value and a high-end threshold value.

3. (original) The adaptive filter of claim 2 wherein the low-end threshold value is a predetermined percentage of a sum of the energy of the plurality of first coefficients.

4. (original) The adaptive filter of claim 3 wherein the predetermined percentage is less than one percent.

5. (original) The adaptive filter of claim 3 wherein the start coefficient is determined by identifying a first coefficient having an associated energy substantially equal to the low-end threshold value multiplied by the predetermined percentage of a sum of the energy of the plurality of first coefficients.

6. (original) The adaptive filter of claim 2 wherein the high-end threshold value is a predetermined percentage of a sum of the energy of the plurality of first coefficients.

7. (original) The adaptive filter of claim 6 wherein the predetermined percentage is greater than ninety-nine percent.

8. (original) The adaptive filter of claim 6 wherein the end coefficient is determined by identifying a last coefficient having an associated energy substantially equal to the high-end threshold value multiplied by the predetermined percentage of a sum of the energy of the plurality of first coefficients.

9. (original) The adaptive filter of claim 5 wherein said second

set of coefficients comprises the start coefficient, the end coefficient, and substantially all first coefficients bounded by said start coefficient and said end coefficient.

10. (original) The adaptive filter of claim 9 wherein the second signal is derived as a function of the second set of coefficients.

11. (original) The adaptive filter of claim 1 wherein the at least one threshold value is determined by selecting a first subset of first coefficients having an average energy and a number of coefficients, selecting a scaling factor, and multiplying the average energy of said subset of first coefficients times the scaling factor.

12. (original) The adaptive filter of claim 11 wherein the scaling factor is between 0 and 10

13. (original) The adaptive filter of claim 12 wherein the scaling factor is 4.

14. (original) The adaptive filter of claim 11 wherein the subset of first coefficients is selected by selecting a final portion of the first coefficients, the final portion comprising at least 5 coefficients.

15. (original) The adaptive filter of claim 14 wherein the final portion comprises 16 coefficients.

16. (original) The adaptive filter of claim 11 wherein the start coefficient is determined by selecting a second subset of first coefficients having an average energy, a first coefficient, and a number of coefficients substantially equal to the number of coefficients in the first subset of first coefficients, obtaining a scaled average energy by multiplying the average energy of said second subset times the scaling factor, comparing the threshold value to the scaled average energy, and, if the threshold value is less than or substantially equal to the scaled average energy, equating the start coefficient to the first coefficient of the second subset of first coefficients.

17. (original) The adaptive filter of claim 11 wherein the end coefficient is determined by selecting a final subset of first coefficients having an average energy, a final coefficient, and a number of coefficients substantially equal to the number of coefficients in the first subset of first coefficients, obtaining a scaled average energy by multiplying the average energy of said second subset times the scaling factor, comparing the threshold value to the scaled average energy, and, if the threshold value

is less than or substantially equal to the scaled average energy, equating the end coefficient to the final coefficient of the final subset of first coefficients.

18. (original) The adaptive filter of claim 16 wherein said second set of coefficients comprises the start coefficient, the end coefficient, and substantially all first coefficients bounded by said start coefficient and said end coefficient.

19. (original) The adaptive filter of claim 9 wherein the second signal is derived as a function of the second set of coefficients.

20. (original) A process for filtering a signal, comprising the steps of: deriving a plurality of second coefficients having a start coefficient and an end coefficient, the second coefficients being a subset of a plurality of first coefficients, wherein the start coefficient and end coefficient are determined by applying at least one threshold value to an energy value, said energy value being a function of the energy of a plurality of first coefficients; receiving a first signal; outputting a second signal wherein the second signal is a function of the second coefficients and the first signal; receiving an error signal; and updating the first coefficients based upon said error signal.

21. (original) The process of claim 20 wherein the at least one threshold value comprises a low-end threshold value and a high-end threshold value.

22. (original) The process of claim 21 wherein the low-end threshold value is a predetermined percentage of a sum of the energy of the plurality of first coefficients.

23. (original) The process of claim 22 wherein the predetermined percentage is less than one percent.

24. (original) The process of claim 22 wherein the start coefficient is determined by identifying a first coefficient having an associated energy substantially equal to the low-end threshold value multiplied by the predetermined percentage of a sum of the energy of the plurality of first coefficients.

25. (original) The process of claim 21 wherein the high-end threshold value is a predetermined percentage of a sum of the energy of the plurality of first coefficients.

26. (original) The process of claim 25 wherein the predetermined percentage is greater than ninety-nine percent.

27. (original) The process of claim 25 wherein the end coefficient is determined by identifying a last coefficient having an associated energy substantially equal to the high-end threshold value multiplied by the predetermined percentage of a sum of the energy of the plurality of first coefficients.

28. (original) The process of claim 24 wherein said second set of coefficients comprises the start coefficient, the end coefficient, and substantially all first coefficients bounded by said start coefficient and said end coefficient.

29. (original) The process of claim 28 wherein the second signal is derived as a function of the second set of coefficients.

30. (original) The process of claim 20 wherein the at least one threshold value is determined by selecting a first subset of first coefficients having an average energy and a number of coefficients, selecting a scaling factor, and multiplying the average energy of said subset of first coefficients times the scaling factor.

31. (original) The process of claim 30 wherein the scaling factor is between 0 and 10

32. (original) The process of claim 31 wherein the scaling factor is 4.

33. (original) The process of claim 20 wherein the subset of first coefficients is selected by selecting a final portion of the first coefficients, the final portion comprising at least 1 coefficient.

34. (original) The process of claim 33 wherein the final portion comprises 16 coefficients.

35. (original) The process of claim 20 wherein the start coefficient is determined by selecting a second subset of first coefficients having an average energy, a first coefficient, and a number of coefficients substantially equal to the number of coefficients in the first subset of first coefficients, obtaining a scaled average energy by multiplying the average energy of said second subset times the scaling factor, comparing the threshold value to the scaled average energy, and, if the threshold value is less than or substantially equal to the scaled average energy, equating the start coefficient to the first coefficient of the second subset of first coefficients.

36. (original) The process of claim 20 wherein the end coefficient is determined by selecting a final subset of first

coefficients having an average energy, a final coefficient, and a number of coefficients substantially equal to the number of coefficients in the first subset of first coefficients, obtaining a scaled average energy by multiplying the average energy of said second subset times the scaling factor, comparing the threshold value to the scaled average energy, and, if the threshold value is less than or substantially equal to the scaled average energy, equating the end coefficient to the final coefficient of the final subset of first coefficients.

37. (original) The process of claim 35 wherein said second set of coefficients comprises the start coefficient, the end coefficient, and substantially all first coefficients bounded by said start coefficient and said end coefficient.

38. (original) The process of claim 37 wherein the second signal is derived as a function of the second set of coefficients.

39. (original) An echo cancellation system for canceling echo within a second signal generated by the transmittal of a first signal through a cross-coupling pathway, comprising: a device for summing a third signal and the second signal to produce an error signal; and an adaptive filter comprising a filter input for receiving the first signal, a filter output for outputting the second signal based upon said first signal, an error input for receiving the error signal, a plurality of first coefficients, each having an associated energy, wherein said first coefficients are updated based upon the error signal, and a plurality of second coefficients having a start coefficient and an end coefficient, the second coefficients being a subset of the first coefficients, wherein the start coefficient and end coefficient are determined by applying at least one threshold value to an energy value, said energy value being a function of the energy of a plurality of first coefficients.

40. (original) The echo cancellation system of claim 39 wherein the start coefficient is determined by identifying a first coefficient having an associated energy substantially equal to a first pre-determined percentage of a sum of the energy of the plurality of first coefficients, and the end coefficient is determined by identifying a last coefficient having an associated energy substantially equal to a second pre-determined percentage of a sum of the energy of the plurality of first coefficients.

41. (original) The echo cancellation system of claim 39 wherein the at least one threshold value is determined by selecting a first subset of first coefficients having an average energy and a number of coefficients, selecting a scaling factor, and multiplying the average energy of said subset of first

coefficients times the scaling factor.

42. (original) The echo cancellation system of claim 41 wherein the start coefficient is determined by selecting a second subset of first coefficients having an average energy, a first coefficient, and a number of coefficients substantially equal to the number of coefficients in the first subset of first coefficients, obtaining a scaled average energy by multiplying the average energy of said second subset times the scaling factor, comparing the threshold value to the scaled average energy, and, if the threshold value is less than or substantially equal to the scaled average energy, equating the start coefficient to the first coefficient of the second subset of first coefficients.

43. (original) The echo cancellation system of claim 41 wherein the end coefficient is determined by selecting a final subset of first coefficients having an average energy, a final coefficient, and a number of coefficients substantially equal to the number of coefficients in the first subset of first coefficients, obtaining a scaled average energy by multiplying the average energy of said second subset times the scaling factor, comparing the threshold value to the scaled average energy, and, if the threshold value is less than or substantially equal to the scaled average energy, equating the end coefficient to the final coefficient of the final subset of first coefficients.

44. (original) A method for canceling an echo wherein the echo is generated by transmitting a first signal through an echo-causing system, comprising the steps of: deriving a plurality of second coefficients having a start coefficient and an end coefficient, the second coefficients being a subset of a plurality of first coefficients, wherein the start coefficient and end coefficient are determined by applying at least one threshold value to an energy value, said energy value being a function of the energy of a plurality of first coefficients; receiving a first signal; outputting a second signal wherein the second signal is a function of the second coefficients and the first signal; receiving an error signal; and updating the first coefficients based upon said error signal.

45. (currently amended) A gateway operative to transmit signals between a circuit switched network and a packet based network, comprising~~: a plurality of digital to analog encoders and decoders; and~~ an echo cancellation device wherein said device comprises an adaptive filter having a plurality of second coefficients having a first coefficient and a second coefficient, the second coefficients being a subset of the first coefficients, wherein the first coefficient and second coefficient are

determined by applying at least one threshold value to an energy value, said energy value being a function of the energy of a plurality of first coefficients.

46. (original) A method for equalizing a channel, comprising the steps of: deriving a plurality of second coefficients having a start coefficient and an end coefficient, the second coefficients being a subset of a plurality of first coefficients, wherein the start coefficient and end coefficient are determined by applying at least one threshold value to an energy value, said energy value being a function of the energy of a plurality of first coefficients; receiving a first signal; outputting a second signal wherein the second signal is a function of the second coefficients and the first signal; receiving an error signal; and updating the first coefficients based upon said error signal.